FACT SHEET FOR NPDES PERMIT NO. WA0040771

Reichhold, Inc.

SUMMARY

The permitting authority has made a tentative decision to issue a new permit, effective through June 30, 2004, to Reichhold Chemicals, Inc. (Tacoma) for the discharge of pollutants from a ground water remediation activity and from storm water associated with industrial activity, to surface waters of the state. Authority is given to the Department of Ecology (Department) to issue National Pollutant Discharge Elimination System (NPDES) permits, along with the obligation to specify in them "conditions necessary to prevent and control waste discharges into waters of the state." The Department must issue a permit unless it finds that the discharge as proposed in the application will pollute the waters of the state in violation of the public policy declared in Revised Code of Washington (RCW) 90.48.010.

The tentative decision to issue the permit is based on a determination that two necessary conditions are fulfilled: (1) that the minimum treatment/control criteria established by state and federal regulations are achievable with the technologies and management practices in place or proposed and (2) that the discharge under these technology-based controls would not have a reasonable potential to cause or contribute to violations of any receiving water quality standards or the characteristic uses of the receiving water.

The purpose of this document is to present the facts on the basis of which a decision to issue the permit was made, and to explain the basis for the permit limits and conditions. The fact sheet is intended to accompany the draft permit.

Interested persons are invited to comment on this tentative decision. A 30-day period for receiving comments on the draft permit begins on _____ and ends on _____. All written comments submitted during the comment period will be retained by the Department and considered in making the final decision on the application for a permit. The Department will provide copies of the application, the draft permit, and the fact sheet on request. Persons who submit written comments will be notified of the final decision.

The applicant or anyone affected by or interested in the decision may request a public hearing. The request must be filed within the 30-day comment period, and must indicate the interest of the party filing such a request and the reasons why a hearing is warranted. The Department will hold a public hearing if it determines there is sufficient public interest.

Please submit written comments to the Department at the address given in Appendix A.

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the NPDES of permits, which is administered by the Environmental Protection Agency (EPA). The EPA has delegated responsibility to administer the NPDES permit program to the state of Washington on the basis of Chapter 90.48 RCW which defines the Department's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the state include procedures for issuing permits [Chapter 173-220 Washington Administrative Code (WAC)], water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant:	Reichhold Chemicals, Incorporated
Facility Name and Address:	Reichhold Chemicals, Incorporated 3320 Lincoln Avenue Tacoma, WA 98421
Type of Facility:	Inactive Chemical Production Site with Remediation Activity
SIC Code:	Not applicable
Discharge Location:	Latitude: 47° 15' 38" N Longitude: 122° 22' 59" W Latitude: 47° 16' 08" N Longitude: 122° 23' 42" W
Water Body ID No.:	WA-10-0020

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

LOCATION

The applicant facility is located within the City of Tacoma between Taylor Way and Alexander Avenue at Lincoln Avenue in the Port of Tacoma industrial area on the former tide flats at Commencement Bay.

HISTORY

Reichhold Chemical, Inc. (RCI) is required under the Federal Resource Conservation and Recovery Act (RCRA) to remediate contamination of soil and ground water at the site of its past chemical production operations at the above location. RCI currently has no production activities at the site. It is now a cleanup and hazardous waste treatment and storage site as defined and permitted by EPA through RCRA. As part of the cleanup activity, the issued RCRA Permit No. WAD 009 252 891 stipulates a specific pump, treat and discharge strategy for ground water remediation. The proposal is to continue to discharge the treated ground water to surface waters of the state and therefore a NPDES permit is required. A discharge permit is also required for "storm water discharge associated with industrial activity" and facilities operating under a RCRA subtitle C permit are specifically included in this definition. Application was first made for both the remediation discharge and the storm water discharge in 1993. A permit was issued effective May 5, 1994, through May 5, 1999. Application to renew the permit was received December 31, 1997.

SOURCES OF POLLUTANT DISCHARGES

The sources of pollutant discharge for which application has been made are the same as for the original permit application: (1) identified plumes of contaminated ground water which are being retrieved by extraction wells and a perimeter drainage collection system, and then treated to destroy or remove the identified pollutants of concern, and (2) site runoff from rainfall (storm water). These discharge points are identified in the permit application as RC-1 and RC-2.

The ground water beneath the site has been contaminated presumably by releases of raw material, product and waste materials during the production of various chemicals at the site from 1956 to 1986.

The storm water discharge, or runoff from rainfall, is from an area of 25 acres, 20 of which have an impervious surface, according to the application. Much of the RCRA-mandated activity is focussed on preventing or minimizing further escape of pollutants from the contaminated site in storm water runoff. Even so, because the facility is regulated under subtitle C of RCRA, this stormwater is by definition "stormwater associated with industrial activity" and the discharge must be permitted. Information on this discharge was provided on the standard EPA application form 2F.

DISCHARGE OUTFALLS

The discharge from the groundwater remediation treatment system (identified in the draft permit as RC-1) is conveyed by buried pipe across Alexander Avenue to a submerged 6" ductile iron outfall with a single port nozzle diffuser approximately 100 feet into Blair Waterway and 30 feet below mean lower low water. The discharge from the storm water collection system (identified in the draft permit as RC-2) is via open channel and weir to Lincoln Avenue ditch, which then also discharges to Blair Waterway.

PERMIT STATUS

The original permit for this discharge became effective on May 5, 1994 and expires on May 5, 1999. (Since a timely and sufficient reapplication has been submitted, the permit will remain in effect until a new permit decision is made. An application for permit renewal was submitted to the Department on December 30, 1997.) After corrections of deficiencies and requests for and submittals of supplemental information, the application was finally accepted by the Department on March 15, 1999.

SUMMARY OF COMPLIANCE WITH THE CURRENT PERMIT

During the term of the current permit, except for one excursion (October 23, 1998 sample), the permittee has remained in compliance with the effluent limitation [based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department]. The single excursion exceeded the technology-based effluent limit, but would have had no potential to cause or contribute to a violation of the receiving water quality standard, based on the calculated dilution factors at the applicable mixing zone boundaries. The Permittee reported the violation, as required, and took aggressive measures to find the cause, but no certain cause was determined. (There was speculation, based on some evidence, of a malfunction in the filter backwash or channeling in the activated carbon column.) In any case, immediate and subsequent sampling and rush analyses showed normal effluent concentrations of pentachlorophenol (<1 μg/L).

As required by Special Condition S6, the outfall for the ground water remediation discharge (RC-1) was physically inspected in 1995, 1996, 1997, and 1998. The latest inspection report (May 1998) described the outfall as "fully functional and the general condition is judged to be fair to good".

The Permittee has been in substantial compliance with all other conditions of the permit.

WASTEWATER CHARACTERIZATION (POLLUTANTS OF CONCERN)

CONTAMINATED GROUND WATER

The ground water beneath the site has been contaminated presumably by releases of raw material, product and waste materials during the production of various chemicals at the site from 1956 to 1986. The primary target pollutant of the ground water cleanup is pentachlorophenol, which was manufactured there nearly all of that time. A list of pollutants which might be of concern in this discharge of remediated ground water to surface water was assembled from what is known about the raw materials used and products made, the extensive ground water sampling and analyses done for the RCRA permit, and the effluent characterization as required by the permit application.

The treatment system consists of a chemical oxidation process using hydrogen peroxide and ultraviolet light, followed by granular activated carbon adsorption. A preliminary flocculation, sedimentation and filtration process to oxidize, precipitate and filter out iron and manganese is employed to prevent their interference with the chemical oxidation and adsorption processes. Hydrogen peroxide is used as the oxidant in this preliminary treatment also. A polymer is added to assist flocculation. Sulfuric acid is added for pH control to optimize percipitation. The system is designed for a maximum flow rate of 150 gallons per minute. Actual flows range from 0 to 225,000 gallons per day, the mean being about 113,000 gallons per day. For the original permit application, the effluent from this treatment system was analyzed for the specific pollutants of concern eight times over eight months. Whole effluent toxicity was monitored four times over the same period. The results of this previous testing (Table 1) along with the pentachlorophenol monitoring results during the term of the current permit and the results of sampling for this reapplication are the basis for this draft permit decision for the remediated ground water discharge. Since the source of the discharge is essentially a reservoir of previously contaminated ground water and

since the method of treatment has not changed, there is no reason to believe that the character of the effluent would have changed adversely since the original testing.

Table 1: Pollutants of Concern in Ground Water Remediation Discharge (Outfall RC-1)

Parameter	Concentration (µg/L)
Ammonia (as N)	11,000
Arsenic	<8
Barium	160
Copper	2.2
Cyanide	1.5
Lead	<4
Manganese	2140
Nickel	87.7
Zinc	115
4,4-DDE	<0.1
4,4-DDT	<0.1
PCB-1242	<1
PCB-1248	<1
Heptachlor	<0.05
Pentachlorophenol	<25
2,3,4,6-Tetrachlorophenol	<10
2,4,6-Trichlorophenol	<10
bis(2-Ethylhexyl)Phthalate	<10
Benzene	<5

Toxicity	Toxic Units
Acute	1.4
Chronic	8.3

STORM WATER ASSOCIATED WITH THE ACTIVITY

As a requirement of the original discharge permit application, the applicant submitted information from the sampling of one storm event. This event, which occurred on October 18, and 19, 1992, produced a rainfall of 0.69 inches over 840 minutes. The maximum discharge rate during this event was measured at 78 gallons per minute, and the total volume of discharge was reported at 8900 gallons. The sampling results reported are listed below (Table 2). The initial sample is a grab sample during the first 30 minutes; the composite is flow weighted over the duration of the rainfall event. Units are mg/L. "ND" indicates

"not detected."

Table 2. Results of Initial Storm Water Monitoring (Units: mg/L)

Pollutant	Initial Sample	Composite
Oil and Grease	4.6	NA
Biochemical Oxygen Demand (5-day)	< 4	< 4
Chemical Oxygen Demand	33	44
Total Suspended Solids	21	11
Total Kjeldahl Nitrogen	.96	.86
Total Phosphorus	.03	.03
Pentachlorophenol	.005	.006
Phenol	< .05	< .05
Barium	.023	.015
Iron	1.5	0.9
Magnesium	1.0	0.77
Manganese	.086	.063
Silver	ND @ 0.01	ND @ 0.01
Molybdenum	ND @ 0.05	ND @ 0.05
Copper	ND@ 0.025	.027
Lead	.036	.029
Zinc	.66	.36

These results indicate that copper, lead, and zinc exceeded applicable published water quality criteria. Because of this, the current permit required further monitoring of these three metals and of pentachlorophenol as well (since it is the primary target of the remediation) in both the discharge and the receiving water (Lincoln Avenue Ditch) through the term of the permit. The metals monitoring data thus collected however have been labeled "inaccurate by one or two orders of magnitude" by a recent Department report, “Metals Concentrations in Commencement Bay Waterways” (February 1999), and is therefore not presented. Exhibit 1 shows the results of the storm water discharge monitoring for pentachlorophenol. (The results of the receiving water monitoring show that pentachlorophenol has been undetectable at 1 µg/L in the receiving water.)

SEPA COMPLIANCE

This is a permit reissuance for an existing discharge and as such is exempt from threshold determination and EIS requirements, per WAC 197-11-850.

BASIS FOR PROPOSED PERMIT CONDITIONS

Federal and state regulations require that effluent limitations set forth in a NPDES permit must be either technology or water quality-based. Technology-based limitations are based upon the treatment methods available to treat specific pollutants. Technology-based limitations are set by regulation or developed on a case-by-case basis (40 CFR 125.3, and Chapter 173-220 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992). The more stringent of these two limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the state of Washington were determined and included in this permit. The Department does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

The Federal Clean Water Act calls for achievement of certain "technology-based" limits, based on the application of "best available technology economically achievable (BAT) for the category or class of source." The activity for which a discharge permit application has been submitted has not been categorized or classed, and has no established federal effluent guidelines as have been set for certain categorical industries. The establishment of BAT is then left to the "best professional judgement" of the individual permit writer. In this case, a method of treatment has been endorsed, if not dictated, as a condition of the RCRA permit. For this reason alone, this method of treatment must be, in the best professional judgement of the permit writer, considered BAT. Therefore, the effluent characteristics from this treatment, based on actual performance, are considered the appropriate technology-based effluent limits with respect to the pollutants of concern in this discharge. This treatment is deemed to satisfy, as well and for the same reasons, the state's requirement that "all known available and reasonable methods of treatment" be applied to the discharge.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Surface water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The U.S. EPA has promulgated 91 numeric water quality criteria for the protection of human health that are applicable to Washington State (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the state of Washington.

ANTIDEGRADATION

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of a receiving water are of higher quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

MIXING ZONES

The Water Quality Standards allow the Department to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones shall not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

DESCRIPTION OF THE RECEIVING WATERS

The facility discharges to inner Commencement Bay which is designated as a Class B receiving water in the vicinity of the outfall. Other nearby point source outfalls include Continental Lime and Lincoln Avenue ditch (across the waterway) which carries the discharges from Lilyblad Petroleum and Cascade Pole. Significant nearby non-point sources of pollutants include industrial area runoff and the very fill material on which this site and the entire land area is composed of. Characteristic uses include the following:

water supply (industrial, agricultural); stock watering; fish migration; fish and shellfish rearing, spawning and harvesting; wildlife habitat; secondary contact recreation; sport fishing; boating and aesthetic

enjoyment; commerce and navigation. Water quality of this class shall meet or exceed the requirements for most uses.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	100 organisms/100 mL maximum geometric mean
Dissolved Oxygen	5 mg/L minimum
Temperature	19 degrees Celsius maximum or incremental increases above background
pH	7.0 to 8.5 standard units
Turbidity	less than 10 NTU above background
Toxics	No toxics in toxic amounts

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

If any water quality standards established pursuant to the Clean Water Act could not be maintained through the implementation of technology-based limits, then more stringent limitations must be set. (Water quality criteria must be met regardless of whether or not there are technology-based limits, or what they are). The established water quality standards for waters of the state of Washington are set out in Chapter 173-201A of the Washington Administrative Code. The applicable water quality criteria from these standards which are used to determine the need for effluent limitations in this draft permit are the marine aquatic life toxicity criteria and human health criteria for organism ingestion. These criteria are the same for all state waters, regardless of classification. Assessment of achievement of water quality standards takes into account the effective dilution by the receiving water within the regulatory maximum allottable zones where criteria may be violated. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and is defined in the permit.

The dilution factors of effluent to receiving water that occur within these zones have been determined at the critical condition by the use of the EPA "PLUMES" mathematical models. The dilution factors have been determined to be:

	Acute	Chronic
Aquatic Life	55:1	202:1
Human Health, Carcinogen		202:1
Human Health, Non-carcinogen		202:1

SPECIFIC EFFLUENT LIMITATIONS - Ground Water Remediation Discharge

The following paragraphs provide the basis for the determination of effluent limits for the pollutants of concern in the discharge, or for the determination that no limits are needed.

Ammonia:

Ammonia was found in the treatment system discharge during the routine testing required by the original permit application. Ammonia was used in the production of ferrous molybdenate from 1959 on. Ammonia was not a target pollutant for the RCRA-mandated ground water remediation. The RCRA-endorsed treatment system is not intended nor expected to remove ammonia, and therefore a technology-based limit is not appropriate. According to the original application, the maximum concentration of total ammonia in the discharge was expected to be 14 mg/L. One sample of wastewater effluent analyzed for the purposes of the current reapplication showed a concentration of 3.7 mg/L. Applying the larger figure, the maximum concentration after mixing in the respective zones where acute and chronic toxicity criteria may be exceeded is calculated (assuming no significant ammonia in the diluting water) to be no more than:

c = 14 / 30 = 0.47 mg/L (acute zone)

c = 14 / 200 = 0.07 mg/L (chronic zone)

The water quality criteria which protect against toxicity to aquatic life are the most stringent criteria for ammonia. The total ammonia concentration which would cause toxicity is pH-, temperature-, and salinity-dependent. In the range of the most critical ambient conditions (pH = 8, T = 16, salinity = 30), the acute and chronic toxicity criteria are approximately 10 mg/L and 1.5 mg/L ammonia, respectively.

On this basis, the permitting authority has again determined that there is no reasonable potential to violate the most stringent ammonia criterion, therefore the draft permit does not place limits on nor require monitoring of ammonia. This determination was originally based on an assumption that there is no significant ammonia in the diluting water. Monitoring required during the term of the permit bears out this assumption. For these reasons, no limits or monitoring requirements for ammonia are established in the new draft permit.

Arsenic:

Arsenic is reported "believed absent" in this reapplication. During the RCRA ground water investigations arsenic was found in the ground water consistently at concentrations well above the applicable human health criterion (organism ingestion) and sometimes exceeded both acute and chronic aquatic life toxicity criteria. There is no obvious source of arsenic indicated by historic production activities on the site. The presence of arsenic is notoriously ubiquitous in the Commencement Bay area. The source is probably waste slag from aluminum smelting, used widely as fill material and pavement.

Arsenic was not detected in the original treatment system effluent sampling, but the detection limit was as high as 8µg/L. (This is below the aquatic life criteria of 69 and 36, but 57 times the human health criterion of 0.14 µg/L.) Still, even within the relatively small zone where chronic aquatic life toxicity criteria are by regulation allowed to be exceeded, the calculated minimum dilution would reduce the concentration by 200 times. Assuming arsenic in the discharge at the detection limit of 8 µg/L and no significant arsenic in the diluting water, the human health criterion would be met even within this zone. The *effective* "dilution factor," that which would reflect the average exposure concentration to the most pertinent food organisms in the receiving water would likely be much greater. On this basis the Department has determined that the discharge has no reasonable potential to cause or contribute to violations of any of the water quality criteria for arsenic. No limits or monitoring requirements are therefore placed in the draft permit.

Barium:

Barium was mistakenly placed on the original list of pollutants of concern. It was found to exceed a water quality criterion (by three times) in one of many samples of ground water during the site assessment. However, the only water quality criterion for barium includes water ingestion, which is not relevant to this saltwater discharge in any case. (Barium was measured in one sample of the treatment system discharge for this reapplication and the result was more than an order of magnitude less than the mentioned criterion.) Hence the draft permit contains neither effluent limitations nor monitoring requirements for barium.

Copper, Nickel and Cyanide:

Copper, nickel, and cyanide are reported in the original application as present, but solely because of their presence in the intake water. That is, they are not there because of activities on the site, but rather because they are ubiquitous in the ground water of that region. Whether the source is natural or man-made is not clear, but the implication of the requirements for application (no quantitative measurements are required) is that the applicant is not required to remove what is already present in its "intake" water, i.e., what it did not add. This seems reasonable in this case, since the ground water is hydrologically connected to the adjacent surface water anyway, so they are constantly exchanging constituents, uncontrolled, where they interface. To reduce levels in this relatively insignificant controlled discharge would be futile in terms of making a difference in the receiving water. Also, one sample of wastewater effluent analyzed for the purposes of this reapplication showed no detectable copper, nickel or cyanide at detection limits of 0.005, 0.040 and 0.050 mg/L respectively. For these reasons, no limitations or monitoring requirements are established in the new draft permit for these three metals.

Lead:

Lead is on the original list of pollutants of concern in this discharge because it was found in the ground water at concentrations ranging from 2 to 350 μg/L, and because the applicant requested to discharge it at 110μg/L (max.). A possible source of lead from activities at the site is lead naphthanate which was a chemical involved in the production of polyurethane at the site between 1969 and 1985. Lead is not a target of the ground water remediation, and the treatment system is not designed to remove it. Even so, the treatment system effluent characterization shows that lead was never detected in eight samples at a detection limit of 4 μg/L or less. One sample of wastewater effluent analyzed for the purposes of this reapplication showed no detectable lead at a detection level of 2.5 μg/L. The most stringent water quality criterion for lead in this receiving environment is the marine chronic criterion of 8.1 μg/L. No receiving water dilution is required to meet the criterion. (The minimum calculated gross dilution available is 200:1). The Department has, therefore, determined that this discharge has no reasonable potential to cause or contribute to violations of the receiving water quality standards for lead. The treatment system is apparently effective in removing lead, even though that was not a design objective and the removal mechanism may not be clear.

Receiving water monitoring during the term of the current permit shows lead concentrations ranging form 2.9 to 220 μg/L. These numbers, if they were accurate, would violate the water quality standards and are generally higher than the concentrations in the wastewater effluent. But a Department report just published on Metals Concentrations in Commencement Bay Waterways (February 1999) cites these data (among others) and unequivocally calls them "inaccurate, overstating concentrations of zinc, lead and nickel by one to two orders of magnitude." This critical assessment is based on The Department's own analyses of the same waterway using "clean" sampling and testing methods, which generated an ambient concentration of 0.28 μg/L.

Manganese:

Manganese was found in almost all ground water samples at levels 10 to 100 times above the human health criterion for organism ingestion. This is the only water quality criterion for manganese. There is no reason to expect elevated levels of manganese based on any past production activities on the site. There is evidence that manganese is ubiquitous in the area ground water, but the source, man-made or natural, is not clear. It was not identified as a target pollutant for the ground water remediation, probably because this ground water is not considered a potential drinking water source. The treatment system is not designed to or expected to remove manganese. The maximum concentration in the remediation discharge may be 2000 μg/L according to the original application. The sample analyzed for the purposes of this reapplication had a total concentration of 1300 μg/L. The water quality criterion for manganese is 100 μg/L. The ambient concentration, as monitored during the term of the current permit, ranged from 2 to 45 μg/L. Using the highest numbers measured for effluent and receiving water concentrations, the maximum resultant concentration at the boundary of the relatively small zone where chronic aquatic life criteria are allowed to be exceeded is calculated as:

$$c_1 Q_1 + c_2 Q_2 = c_3 Q_3$$

$$c_3 = [2000 (1) + 45 (200) / 201] = 55 \text{ μg/L}$$

(The effective dilution factor which would reflect the true average exposure concentration to pertinent food organisms in the receiving water would likely be much higher than this since they would not be confined to the small area defined by the "mixing zone.")

On this basis the Department determines that this treated discharge has no reasonable potential to cause or contribute to violations of any water quality criteria for manganese. Because the treatment system is not designed to remove manganese, a technology-based limit would not be appropriate. The permit then contains no limits or monitoring requirements for manganese.

Zinc:

Zinc is on the original list of pollutants of concern because it was detected in the RCRA ground water investigations in a few samples at concentrations around the most stringent applicable water quality criterion. It was also reported at a similar level (60μg/L) in the original application to discharge. One sample of wastewater effluent analyzed for the purposes of this reapplication showed a zinc concentration of 23 μg/L.

There is no known source for the zinc in terms of historical activities at the site. Zinc was not a target pollutant for the ground water remediation. The treatment system is not designed to remove zinc, nor does it. The original treatment system effluent characterization showed a maximum concentration of 115 μg/L. The most stringent water quality criterion for this receiving water, taking into account the respective mixing zone dilutions, is the marine acute criterion of 90 μg/L. Using the EPA-recommended statistical analysis, a multiplying factor of 3.3 was applied to this highest value among eight actual effluent measurements to arrive at the 99th percentile of statistically predicted effluent concentrations:

$$c_{max} = 115 (3.3) = 380$$

A dilution factor of 380/95 = 4 is required to meet the criterion. The minimum calculated dilution at the boundary of the allottable zone of criteria exceedance is 55:1 (assuming no zinc in the diluting water).

Monitoring during the term of the current permit shows zinc ranging from 20 to 290 μg/L, but a Department report just published, titled "Metals Concentrations in Commencement Bay Waterways" (February 1999), cites these data (among others) and unequivocally calls them "inaccurate, overstating concentrations of zinc, lead and nickel by one to two orders of magnitude." This assessment is based on the Department's own analyses of the same waterway using "clean" sampling and testing methods.

The Department, on the basis of the above information, cannot show a reasonable potential that the discharge would cause or contribute to violations of the water quality criteria for zinc. The draft permit then contains no limits or monitoring requirements for zinc. (A technology-based permit limit is not appropriate since the system was not designed to nor has demonstrated any ability to remove zinc.)

Heptachlor, DDE and DDT:

The pesticides heptachlor, DDE and DDT are on the original list of pollutants of concern because they were found in the ground water at concentrations 30-50 times the most stringent aquatic life criteria for these compounds. It should be noted, however, that each was found in only one sample (and the same sample) of many analyzed. The applicant reports these compounds as "believed absent" in the effluent from the treatment system. They were undetected in the treatment system effluent sampling, but the detection limits were substantially higher than the criteria. DDT was not detected in any of the eight samples at 0.1 μg/L. Assuming it were present at that level, a dilution factor of 100 would be required to meet the chronic criterion of 0.001. The calculated minimum dilution at the boundary of the zone in which chronic criteria may be exceeded is 200. Based on these considerations, the Department has determined that there is no reasonable potential to cause or contribute to violations of the receiving water aquatic life standards for DDT. If the DDT chronic toxicity requirement is met, all aquatic life criteria for these three pesticides will be met.

The human health criterion for ingestion of organisms is applicable here and is even more stringent than the aquatic life criteria. The criterion for DDT (0.00059μg/L) is again the most stringent of the three. A concentration at the reported detection limit of 0.1 μg/L would require an effective "dilution factor" of 170 for average exposure to food organisms. Though there is as yet no plausible way to estimate the average exposure concentration to a pertinent food organism in this unconfined receiving environment, especially when criteria are far below detection limits, it is evident in this case that the maximum allowable exposure concentration due to this discharge would not extend even to the boundary of the maximum allotted zone for aquatic life toxicity criteria exceedance, even if DDT were present at the detection limit of 0.1 μg/L. Based on this, the Department determines that this discharge has no reasonable potential to cause or contribute to violations of any water quality criteria for these pesticides, including human health criteria. No limitations or monitoring requirements are therefore placed in the permit.

Arochlors-1242 & 1248:

These two polychlorinated biphenyls (PCBs) were found in only two samples (both in one, one in the other) of all the samples analyzed during the RCRA ground water investigation. However, when detected, they were 200 to 300 times the aquatic life criteria for PCB's, so they were placed on the list of pollutants of concern in the discharge. They were undetected at .5 to 1 μg/L in the eight treatment system discharge samplings, and on that basis were reported in the application as "believed absent" from the discharge. They have again been reported "believed absent" in the reapplication.

Assuming that PCB's were present in the discharge at the highest detection limit reported (1 μg/L), the calculated minimum dilution at the boundary of the zone of allowable exceedance of chronic criteria

would reduce the concentration to 1/200 = .005 µg/L. This is well below the marine chronic criterion of .03 µg/L. On this basis, the Department determines there is no reasonable potential for this discharge to cause or contribute to violations of water quality criteria for marine aquatic life.

Human health criteria for PCB's based on organism ingestion are many times more stringent, but there is as yet no plausible way to estimate the average exposure concentration to a pertinent food organism in this unconfined receiving environment, especially when criteria are far below detection limits. A more rigorous assessment of compliance with human health criteria may be undertaken during the term of this permit or when reapplication is made. A provision to reopen and modify the permit for this purpose is made part of this permit (Special Condition S8). No discharge or receiving water monitoring is required in the draft permit to provide information for this because the detection/quantification levels are not low enough to make it useful.

Pentachlorophenol:

Pentachlorophenol is the primary target of the ground water remediation. Pentachlorophenol, a wood preservative, was a major product at this site for 30 years. Concentrations up to 18,000 µg/L were found during the ground water investigations. The treatment system effluent monitoring over eight months prior to the issuance of the original permit showed pentachlorophenol as undetectable at 25 µg/L or less in all samples. The most stringent applicable criterion, considering the respective calculated dilution factors, is the marine aquatic life criterion for acute toxicity, 7.9 µg/L. Assuming an effluent concentration at the highest limit of detection (25 µg/L) and using the calculated minimum dilution within the zone of allowable exceedance of acute criteria, the concentration of pentachlorophenol would be 25 / 55 = 0.45 µg/L. Based on this, the Department determined there was no reasonable potential for this discharge to cause or contribute to violations of the water quality criteria for pentachlorophenol. A technology-based limit of 25 µg/L, based on the actual performance of the treatment system, was established for pentachlorophenol in the original permit. Monthly monitoring of the discharge during the term of the current permit showed a mean of 2.7 µg/L with a single excursion (62 µg/L) above the permit limit. (The second-highest result was 3.9 µg/L.) But even the highest result would not have violated the water quality criterion: 62 / 55 = 1.1 µg/L.

The evaluation of the potential of this discharge to cause or contribute to violations of water quality standards for pentachlorophenol was based on an assumption of no significant ambient pentachlorophenol in the receiving water. Semi-annual monitoring during the term of the current permit shows a mean ambient receiving water concentration of 0.93 µg/L, the maximum result being 1.4 µg/L. This level does not affect the determination.

On the basis of the considerations above, the current effluent limit of 25 µg/L pentachlorophenol is retained in the new draft permit. Because federal regulations require it, a monthly average limitation has been added. This limit is loosely based on the typical relationship between daily maximum and monthly average limits in federal effluent guidelines for categorical industries and publicly owned treatment works. Monitoring data accumulated during the previous permit term show that the limits are reliably achievable by the technology being applied.

2.3.4.6-Tetrachlorophenol:

This compound is a potential byproduct of the production of pentachlorophenol. It was detected in the RCRA ground water investigations only once at a concentration above (and only slightly above) the "lowest observed effect level (LOEL)" in marine acute toxicity tests (440 µg/L). A treatment system influent sample measured 310 µg/L. It was undetected at 10 µg/L in all eight treatment system effluent

samples and was reported "believed absent" in the reapplication. There is no toxicity criterion established, other than the noted "LOEL," which the effluent concentration is well below. It is determined on this basis that there is no reasonable potential for this discharge to cause or contribute to the violation of any receiving water standards for this compound. The technology-based limit placed on pentachlorophenol is expected to effectively control the discharge of this similar pollutant.

2,4,6-Trichlorophenol:

This compound, also a potential byproduct of the production of pentachlorophenol, was found in three ground water samples at concentrations l0 to 30 times the human health criterion of 3.6 µg/L for organism ingestion. This is the only water quality criterion for 2,4,6-Trichlorophenol. It was undetected at a detection level of 10 µg/L in all eight samples taken for effluent characterization. On that basis it was reported as "believed absent" in the original application. (It has been reported "believed absent" again in the reapplication.) As has been stated previously, there is as yet no plausible way to estimate the average exposure concentration for application of the human health criteria in this unconfined receiving environment, especially when the criterion is below detection limits. However, it *can* be said that even within the relatively small zone of allowable chronic criteria exceedance, this compound would be diluted 200 times (assuming none in the dilution water), which would put it far below the criterion within 225 feet of the discharge point. It is likely that the average exposure concentration for a pertinent food organism in this receiving environment would be even less. On this basis, it is determined that there is no reasonable potential that this discharge would cause or contribute to violations of any water quality criteria for 2,4,6-Trichlorophenol. No limitation or monitoring requirements will be established. Instead, the technology-based limit on pentachlorophenol will likely control this pollutant, since it is similar, and the removal mechanisms are similarly effective.

bis (2-Ethylhexyl) Phthalate:

This compound was placed on the list of pollutants of concern because it was found in several ground water samples at up to 10 times a chronic "lowest observed effect level" (3.4 µg/L) for one species of saltwater algae. (There is insufficient data to develop chronic toxicity criteria, and this LOEL was for "phthalate esters," not specifically this compound.) Since the current permit was issued, human health criteria have been promulgated. The most stringent criterion is 5.9 µg/L (for organism ingestion only). The source of this compound may be polyester resins, which were produced at the site from 1961 on. Phthalate was found to be present in the discharge from the ground water treatment system, but at levels below the practical quantification limit. The laboratory estimated up to 7 µg/L. At this concentration, a dilution of about 2:1 in the zone where chronic criteria and human health criteria may be exceeded is required. The calculated minimum dilution in that zone is 200:1. Therefore, the Department has determined that this discharge has no reasonable potential to violate any water quality standards for phthalate esters. The technology-based limits on pentachlorophenol will assure the efficient operation of the treatment system, which incidentally removes this pollutant, too. For these reasons, no limits or monitoring requirements are established in the draft permit.

Benzene:

Benzene was found in two samples during the ground water investigation, but barely above the most stringent applicable criterion. Since there was, in the beginning, no information on treatment effectiveness or dilution, benzene was placed on the list of pollutants of concern. It was not a product or material used in the processes, but it is a component of petroleum fuels. The criterion exceeded (human health - organism ingestion) was 40 µg/L; the highest concentration detected was 56 µg/L. (This criterion has now been raised to 71 µg/L.) It was not detected at a detection limit of 5 µg/L in the series of eight

effluent samples for the original permit application, and was reported as "believed absent" in the original application and again in the reapplication. Since the effluent concentration was well below the criterion, the Department determined that the discharge has no reasonable potential to cause or contribute to any violation of water quality criteria for benzene. The technology-based limits on pentachlorophenol will assure the efficient operation of the treatment system which incidentally removes this pollutant, too. For these reasons, no limits or monitoring requirements are established in the draft permit.

Acute Toxicity:

The whole effluent toxicity testing done on live organisms for the original permit application resulted in a finding of no reasonable potential to cause or contribute to exceedances of acute whole effluent toxicity criteria by the EPA-recommended methodology in place at the time. (Statistically, there was a 99 percent confidence that no test result would exceed 0.12 “acute toxic units” outside the authorized mixing zone. The maximum EPA criterion is 0.3.) Since then, the state has developed a different methodology for making the determination of whole effluent toxicity potential. This new methodology would infer an acute toxicity potential and require that an acute toxicity limit be established, based on the original toxicity testing results. On this basis, an acute toxicity limit is placed in the new draft permit. The authority and obligation for this permit condition is imposed by WAC 173-205.

Chronic Toxicity:

The whole effluent toxicity testing done on live organisms for the original permit application resulted in a finding of no reasonable potential to cause or contribute to exceedances of chronic whole effluent toxicity criteria by the EPA-recommended methodology in place at the time. (Statistically, there was a 99 percent confidence that no test result would exceed 0.19 “chronic toxic units” outside the authorized mixing zone. The maximum EPA criterion is 1.0.) Since then, the state has developed a different methodology for making the determination of whole effluent toxicity potential. This new methodology would not infer a chronic toxicity potential and therefore would not require that a chronic toxicity limit be established, based on the original toxicity testing results. On this basis, no chronic whole effluent toxicity limit is placed in the new draft permit. (Since the source of the discharge is essentially a reservoir of previously contaminated ground water which should have, if anything, improved in quality since the original testing, and since the method of treatment has not changed, there is no reason to believe that the character of the effluent would have changed adversely since the original toxicity testing.)

SPECIFIC EFFLUENT LIMITATIONS - Storm Water Discharge

No specific effluent limitations are established for the storm water discharge. In accordance with EPA's storm water pollution control strategy, the permit has adopted "best management practices" for source control as the most practical way to control pollutants in storm water runoff.

SEDIMENT QUALITY LIMITATIONS

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect beneficial uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This Permittee has no discharge to ground and therefore no limitations are required based on potential effects to ground water.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories.*

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 273-220-210).

STORM WATER CONTAMINANT SOURCE CONTROL

In accordance with EPA's storm water pollution control strategy, the permit has adopted "best management practices" for source control as the most practical way to control pollutants in storm water runoff. Conditions requiring discharge monitoring and storm water contaminant source controls were established in the current permit to this end. The monitoring results show that the source control measures were effective in identifying the sources and in reducing the pentachlorophenol discharges from these sources. (Refer to Exhibit 1). The new draft permit continues the monitoring of the storm water discharge for pentachlorophenol (Special Condition S2). Source control measures will be resumed per the specific procedural measures stipulated in Special Condition S6 if the pentachlorophenol concentration increases above recently-maintained levels.

The Department is authorized to include "best management practices" in permits to control or abate the discharge of pollutants if they are reasonably necessary to achieve effluent limitations or to carry out the purposes and intent of the Clean Water Act (40 CFR 122.44(k)).

OUTFALL EVALUATION

Proposed permit condition S7 requires the Permittee to conduct annual outfall inspections and to submit reports detailing the findings of that inspection. The purpose of the inspection is to determine the

condition of the discharge pipe and diffusers and to evaluate the extent of sediment accumulations in the vicinity of the outfall.

TREATMENT SYSTEM OPERATING PLAN

In accordance with state and federal regulations, the permittee is required to take all reasonable steps to properly operate and maintain the treatment system (40 CFR 122.41(e)) and WAC 173-220-150 (1)(g). An operation and maintenance manual was previously submitted as required by state regulation for the construction of wastewater treatment facilities (WAC 173-240-150). It has been determined that the implementation of the procedures in the treatment system operating plan is a reasonable measure to ensure compliance with the terms and limitations in the permit.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual industrial NPDES permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Conditions G7 and G8 relate to permit renewal and transfer. Condition G9 requires the Permittee to control its production in order to maintain compliance with its permit. Condition G10 prohibits the reintroduction of removed substances back into the effluent. Condition G11 states that the Department will modify or revoke and reissue the permit to conform to more stringent toxic effluent standards or prohibitions. Condition G12 incorporates by reference all other requirements of 40 CFR 122.41 and 122.42. Condition G13 notifies the Permittee that additional monitoring requirements may be established by the Department. Condition G14 requires the payment of permit fees. Condition G15 describes the penalties for violating permit conditions.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards for Surface Waters, Sediment Quality Standards, or Water Quality Standards for Ground Waters, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, protect human health, aquatic life, and the beneficial uses of waters of the state of Washington. The Department proposes that this proposed permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on (date) and (date) in (name of publication) to inform the public that an application had been submitted and to invite comments on this permit.

The Department will publish a Public Notice of Draft (PNOD) on (date) in (name of publication) to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (360) 407-6280, or by writing to the address listed above.

This permit and fact sheet were prepared by the Water Quality Program**.**

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10 percent by volume and the receiving water 90 percent.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Responsible Corporate Officer-- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.